J. New York Entomol. Soc. 95(1):109–113, 1987

LECTOTYPE DESIGNATIONS FOR THE TICKS (ACARI: IXODOIDEA: IXODIDAE) DESCRIBED BY ASA FITCH

James E. Keirans and Jeffrey K. Barnes

Department of Health and Human Services, Public Health Service, National Institutes of Health, National Institute of Allergy and Infectious Diseases, Department of Entomology, Museum Support Center, Smithsonian Institution, Washington, D.C. 20560 and Biological Survey, New York State Museum, The State Education Department, Albany, New York 12230

Abstract.—Dr. Asa Fitch, the first professional entomologist appointed by a state legislature, described three tick species and what he questionably believed to be a fourth. These specimens have been rediscovered, and lectotypes have been designated.

Dr. Asa Fitch (1809–1879) was born in Salem, Washington County, New York, where he lived for most of his life. Although he was a physician by training, he was an entomologist by inclination, and he was even nicknamed "The Bug-Catcher" by his neighbors (Mallis, 1971). Fitch was not officially entitled to the name of State Entomologist of New York, although he was sometimes accorded that title, and from 1855 to 1872 he published fourteen reports on the noxious, beneficial, and other insects of the State of New York. In these reports and several other publications he described well over 400 arthropod species and subspecies, and he is especially well remembered for his work with Homoptera. In his fourteenth report (Fitch, 1872), he described three tick species, and questionably placed a fourth species in the genus *Ixodes*: 1) the five-lined tick, *I. quinquestriatus* (as "*I. 5-striatus*"), 2) Robertson's tick, *I. robertsonii,* 3) the torturing tick, *Ixodes cruciarius,* and 4) the toothache mite, ?*Ixodes odontalgiae.*

Neumann (1911) synonymized both *I. quinquestriatus* and *I. robertsonii* with *Dermacentor variabilis* (Say, 1821) and *Ixodes cruciarius* with *I. cookei* Packard, 1869. Cooley (1938) followed Neumann in accepting the *Dermacentor* synonymies. Cooley and Kohls (1945) and Keirans and Clifford (1978) accepted the *Ixodes cruciarius* synonymy. Bequaert (1946) accepted all of Neumann's synonyms.

It is known that Professor Cooley examined Fitch's specimens of *Ixodes quinquestriatus* and *I. robertsonii.* We are in possession of Dr. Glen M. Kohls' copy of Bequaert (1946) in which he wrote beside the entries for *I. quinquestriatus* and *I. robertsonii* (p. 165) "♀ [*quinquestriatus*], ♂ [*robertsonii*], on pin, seen by Cooley, March, 1939." Kohls was Cooley's coworker for many years. It appears that no one has seen any of Fitch's tick specimens, which, along with all their associated collecting data, have been "lost" to science for the intervening 47 years.

Dr. Fitch never designed a type for any of his species. However, he did label nearly all of his specimens with individual numbers, which he recorded in four register books—two for specimens from New York State, one for specimens from elsewhere

in the United States and from Canada, and one for specimens from other parts of the world. The register books for specimens from the United States and Canada, including New York State, are in the New York State Museum, Albany, and the other book is in the library of the Museum of Science, Boston.

In his registers, next to the appropriate specimen numbers, Fitch recorded the species names and various collecting data, including dates and localities. He also recorded the numbers and dates in his extensive manuscript notes, most of which are in the possession of the New York State Museum. His specimen labels can be readily correlated with the register numbers, thus enabling the recognition of type series and the determination of localities and other data relating to the types (Barnes, 1984a, b). Having recognized the type series, it is possible to designate lectotypes. Keirans has had the opportunity to study Fitch's types of *I. quinquestriatus, I. robertsonii, I. cruciarius,* and *I. odontalgiae.* The specimen of the latter species (National Parasite Collection number 3477; Type No. 1346 USNM) is an immature spider and will not be mentioned further. Lectotypes and paralectotypic series have been designated and isolated within the vials and jars containing specimens of the taxa. The nomenclative status of this material is clearly indicated on an additional included label.

Many of Fitch's tick specimens were sent to his home in Salem, New York, by William Schenck Robertson, a pioneer educator at the Tullahassee Mission in Indian Territory (Dale, 1935). Fitch received thousands of arthropod specimens from Robertson, and he usually indicated in his registers and notes that they came from "Tullehassie, West of Arkansas" (=Tullahassee, Wagoner County, Oklahoma) and gave a date—presumably the one on which an individual lot of specimens was received.

At least one tick specimen sent by Robertson was recorded as having come from "Park Hill, bank of Illinois Creek—Aug. 13, 1852." These data seemed enigmatic until we discovered that in 1850 Robertson married Ann Eliza Worcester, the eldest child of Rev. Samuel A. Worcester, who had for some years been in charge of the Cherokee mission at Park Hill, Cherokee County, Oklahoma, less than 30 miles from Tullahassee (Dale, 1935).

Ixodes quinquestriatus Fitch, 1872:366

Junior subjective synonym of *Dermacentor variabilis* (Say, 1821).

There are two jars labelled "*Ixodes quinque-striatus*" as follows:

Jar #1 contains 3♀♀ *Dermacentor variabilis* as follows:

1) 1 *D. variabilis* on full pin; hand-written 2995 on white label on pin. 2) 1 *D. variabilis* on full pin; hand-written 1256 on white label on pin. 3) 1 *D. variabilis* on broken pin; no label. There are 3 free-floating labels in the alcohol: 1) *Ixodes 5-striatus,* Ark. W. S. Rob. [Hand-written]. 2) Fitch's Collection [Machine-printed]. 3) 5688 [Hand-written]. Presumably this label belongs to the ♀ *D. variabilis* on the broken pin.

The three ticks in this jar were given National Tick Collection number RML 118013 and National Parasite Collection number 3472.

Jar #2 contains 1♀ *Dermacentor variabilis* on a broken pin. There are 6 free-floating labels in the alcohol:

1) *Ixodes 5-striatus,* Va. T.A. Culb. [Hand-written]. 2) Fitch's Collection [Machine-printed]. 3) Fitch's Type [Machine-printed]. 4) Type No. 1348 U.S.N.M. [Machine-printed except for hand-written number]. 5) TYPE [Machine-printed]. 6) 744 [Hand-written].

This tick was given National Tick Collection number RML 118014 and National Parasite Collection number 3472.

Types. Lectotype ♀ (RML 118014; NPC 3472; USNM 1348; Fitch 744) *Ixodes quinquestriatus,* host unknown, Cartersville, Cumberland County, Virginia, received by Dr. Fitch in 1847 from Thaddeus A. Culbertson and 3♀♀ paralectotypes (RML 118013; NPC 3472; Fitch 2995, 1256, 5688), host unknown, Tullehassie, Indian Territory west of Arkansas (now Tullahassee, Wagoner County, Oklahoma) received by Dr. Fitch on Dec. 4, 1851 (2995), Jun. 19, 1851 (1256), and Jul. 1852 (5688) from William S. Robertson. All are deposited in the National Parasite Collection, U.S. Department of Agriculture, Beltsville, Maryland 20705, USA.

Fitch listed another specimen in his register and notes, his number 5760, with the same data as number 5688, but we have not located it.

Ixodes robertsonii Fitch, 1872:366

Junior subjective synonym of *Dermacentor variabilis* (Say, 1821).

In the jar are 2♂♂ *D. variabilis,* one on a full pin with an attached label with a hand-written number 6364. The second specimen is on a broken pin and on another piece of broken pin is a label with the hand-written number 1639. There are 4 free-floating labels in the alcohol:

1) *Ixodes robertsonii,* Fitch [Hand-written]. 2) Fitch's Collection [Machine-printed]. 3) TYPE [Machine-printed]. 4) Type No. 1351 U.S.N.M. [Machine-printed except for hand-written number].

Types. Lectotype ♂ (on full pin) (RML 118012; NPC 3475; USNM 1351; Fitch 6364), and 1♂ paralectotype (RML 118012; NPC 3475; USNM 1351; Fitch 1639) *Ixodes robertsonii,* host unknown, bank of Illinois Creek, Park Hill, Cherokee County, Oklahoma, Aug. 13, 1852, Rev. William S. Robertson. Collection data for lectotype from Fitch's manuscript notes and collection register; no collection data mentioned in his manuscript notes for the paralectotype (Fitch 1639). Both specimens deposited in the National Parasite Collection, U.S. Department of Agriculture, Beltsville, Maryland 20705, USA.

In addition to Fitch's tick species *I. robertsonii,* we also found in the National Tick Collection two ticks in a jar labelled *Ixodes robertsonii* var. o-------s. There are 6 free-floating labels in the alcohol:

1) *Ixodes* [specific epithet crossed out] var. o-------s, Ark. W.S. Rob. [Hand-written]. 2) Fitch's Collection [Machine-printed]. 3) Fitch's Type [Machine-printed]. 4) 2859 [Hand-written]. 5) Virtually unintelligible label bearing the remains of a number, perhaps 5597 [Hand-written]. 6) Type No. 1352 U.S.N.M. [Machine-printed except for hand-written number].

The two ticks, each with a pin hole, are 1♂ *Amblyomma maculatum* Koch and 1♂ *Amblyomma cajennense* (Fabricius). The collection has been given National Tick Collection number RML 118017; USNM 1352.

According to Fitch's specimen register, collection 2859 arrived at his home in New

York, Dec. 4, 1851, and was received from William S. Robertson, Tullehassie, W. of Arkansas. Evidently, Fitch was unsure whether these specimens constituted a new species or a variety of *I. robertsonii* and so published neither description nor name. Fitch's tick name is not recorded here because it would constitute a *nomen nudum.* Specimens deposited in the National Tick Collection, Museum Support Center, Smithsonian Institution, Washington, D.C. 20560, USA.

Ixodes cruciarius Fitch, 1872:366

Junior subjective synonym of *Ixodes cookei* Packard, 1869.

In the jar is 1 nymph of *Ixodes cookei* on a broken pin. There are 4 free-floating labels in the alcohol:

1) Fitch's Collection [Machine-printed]. 2) Fitch's Type [Machine-printed]. 3) Type No. 1347 U.S.N.M. [Machine-printed except for hand-written number]. 4) TYPE [Machine-printed].

Type. Lectotype nymph (RML 118015; NPC 3476; USNM 1347) *Ixodes cruciarius,* no collecting data with specimen, although the USNM Type catalogue lists the collection from New York. According to Fitch's published description and manuscript notes, he saw at least three specimens, including a very small one collected Sept. 8, 1857 "on Anna's [his daughter's] arm." That specimen is not numbered in Fitch's notes. His specimen number 15,669 was collected Nov. 1, 1868 from a mink, and his specimen number 15,670 was found in "1868 on Miss Turner's leg, in bed, by night." All 3 specimens were presumably collected at or near his home in Salem, New York. Lectotype deposited in the National Parasite Collection, U.S. Department of Agriculture, Beltsville, Maryland 20705, USA.

ACKNOWLEDGMENTS

We thank Dr. J. Ralph Lichtenfels, Curator, National Parasite Collection, U.S. Department of Agriculture, Beltsville, MD, for allowing JEK to study Asa Fitch's tick collection. Dr. Wayne N. Mathis and Mr. Richard G. Robbins, Department of Entomology, Smithsonian Institution, kindly reviewed the manuscript. Published in part as contribution number 485 of the New York State Science Service.

LITERATURE CITED

Barnes, J. K. 1984a. The Membracidae and other Homoptera described by Asa Fitch, 1851, and Ebenezer Emmons, 1855: historical perspective and analysis. J. N.Y. Entomol. Soc. 92:27–34.

Barnes, J. K. 1984b. Recently recognized types of some Homoptera described by Dr. Asa Fitch. Psyche 91:133–139.

Bequaert, J. C. 1946. The ticks, or Ixodoidea, of the northeastern United States and eastern Canada. Entomol. Amer. 25:73–232.

Cooley, R. A. 1938. The genera *Dermacentor* and *Otocentor* (Ixodidae) in the United States, with studies in variation. Nat. Inst. Hlth. Bull. (171):1–89.

Cooley, R. A. and G. M. Kohls. 1945. The genus *Ixodes* in North America. Nat. Inst. Hlth. Bull. (184):1–246.

Dale, E. E. 1935. Robertson, William Schenck. Page 30 *in:* D. Malone (ed.), Dictionary of American Biography, Vol. 16. Charles Scribner's Sons, New York.

Fitch, A. 1872. Fourteenth report on the noxious, beneficial, and other insects of the State of New York. Trans. N.Y. St. Agric. Soc. 30(1870):355–381.
Keirans, J. E. and C. M. Clifford. 1978. The genus *Ixodes* in the United States: a scanning electron microscope study and key to the adults. J. Med. Entomol. Suppl. No. 2, 149 pp.
Mallis, A. 1971. American Entomologists. Rutgers Univ. Press, New Brunswick, New Jersey, xvii + 549 pp.
Neumann, L. G. 1911. Ixodidae. Das Tierreich (26), 169 pp.

Received March 3, 1986; accepted April 23, 1986.